

# Safety Data Sheet (SDS)

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## Yttria Stabilized Zirconia Substrate

### 1. Identification

**Product Name:** Yttria Stabilized Zirconia (YSZ) Substrate

**Chemical Name:** Yttria Stabilized Zirconia

**CAS Number:** Not assigned to solid form (Raw material CAS: 114168-16-0)

**Purity:** 99.99% (Typical)

**Appearance:** White solid substrate / wafer / disc

**Recommended Use:** Substrate for thin film deposition

**Supplier:** Keyue Advanced Materials LLC, 32 N Gould St., Sheridan, WY  
82801 USA

**Synonyms:** YSZ, Yttrium stabilized zirconium oxide

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### 2. Hazard Identification

**GHS Classification:** Not classified as hazardous under GHS

**Pictograms:** None

**Signal Word:** None

**Hazard Statements:** None

**Potential Hazards:**

This product is a fully sintered solid ceramic substrate. In its supplied form, it presents no known health hazards under normal handling conditions. May cause mechanical irritation to eyes and respiratory tract if dust is generated (e.g. during cutting, grinding, or polishing). Avoid generating airborne dust.)

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### 3. Composition / Information on Ingredients

Component	Formula	CAS No.	Purity / Content
Zirconium Oxide	ZrO <sub>2</sub>	1314-23-4	78 - 94%
Yttrium Oxide	Y <sub>2</sub> O <sub>3</sub>	1314-36-9	4 - 20%
Hafnium Oxide	HfO <sub>2</sub>	12055-23-1	1 - 2%
Aluminum Oxide	Al <sub>2</sub> O <sub>3</sub>	1344-28-1	0 - 3%

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### 4. First-Aid Measures

**Inhalation:** Remove to fresh air. Seek medical attention if symptoms persist.

**Skin Contact:** Wash with soap and water.

**Eye Contact:** Rinse with clean water for several minutes.

**Ingestion:** Rinse mouth; seek medical attention if discomfort occurs.

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### 5. Fire-Fighting Measures

- **Flammability:** Not flammable
  - **Suitable Extinguishing Media:** Dry chemical, CO<sub>2</sub>, water spray
  - **Hazardous Decomposition:** None known
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### 6. Accidental Release Measures

Avoid creating dust. Sweep up broken pieces and place in a clean, closed container.

Use appropriate PPE (gloves, goggles, dust mask) if cleaning up broken pieces.

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### 7. Handling and Storage

**Handling:**

Handle with care to avoid breakage (ceramic is brittle). Use clean tweezers or gloves to avoid surface contamination. Avoid dust generation. Use adequate ventilation if cutting or grinding.

**Storage:**

Store in dry, cool, ventilated area. Keep container tightly sealed. Store in original container or clean wafer box.

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## 8. Exposure Controls / Personal Protection

**Exposure Limits:** No specific OSHA PEL or ACGIH TLV established for solid YSZ.

**Respirator:** Not required under normal use. Dust mask if dust is generated.

**Gloves:** Gloves recommended to prevent surface contamination  
(not required for toxicity).

**Eye Protection:** Safety goggles recommended (mechanical protection).

**Engineering Controls:** Local exhaust ventilation if dust is generated.

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## 9. Physical and Chemical Properties

**Property:** Value

**Appearance:** White solid substrate / wafer / disc

**Melting Point:** ~2500°C (~4530°F)

**Boiling Point:** ~3800°C (~6870°F)

**Density:** 5.95 – 6.05 g/cm<sup>3</sup>

**Solubility:** Practically insoluble in water

**Odor:** Odorless

**Flammability:** Not flammable

## 10. Stability and Reactivity

**Stability:** Stable under normal conditions.

**Incompatibility:** None known.

**Decomposition:** None under normal use.

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## 11. Toxicological Information

**Toxicity:** Low toxicity, No known acute toxicity for solid form.

**Irritation:** Dust may mechanically irritate eyes, skin, and respiratory tract.

**Carcinogenicity:** No known carcinogenicity.

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## 12. Ecological Information

**Ecotoxicology:** Not expected to pose significant environmental hazard.

**Persistence:** Insoluble and stable in the environment.

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## 13. Disposal Considerations

**Disposal:** Dispose in accordance with local regulations. Non-hazardous solid waste (USA: per 40 CFR definitions).

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## 14. Transport Information

**UN Number:** Not regulated

**DOT / IATA / IMDG:** Not classified as hazardous

**Hazard Class:** None

**Packing Group:** None

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## 15. Regulatory Information

**OSHA HCS (29 CFR 1910.1200):** Not listed as hazardous.

**REACH (EU):** Compliant. Not listed under Annex XIV or SVHC.

**California Proposition 65:** Does not contain any Proposition 65 chemicals.

**Transport:** Not a controlled material for transport.

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## 16. Other Information

This Safety Data Sheet (SDS) applies to the solid, fully sintered YSZ substrate product only. The information provided is correct to the best of our knowledge and is designed only as guidance for safe handling and use. It does not represent a warranty or quality specification. Users should evaluate suitability for their specific applications.